

IN THE CLAIMS:

Please enter the following amended claims:

1. (Amended) A gas sensor comprising:

a sensor element formed of a solid electrolyte having an oxygen ion conductivity;

a cathode and an anode, each formed of a porous metal material and each formed on the sensor element, to produce a pumping current reflecting a concentration of a detection component in a measurement gas when a predetermined voltage is applied between the cathode and the anode, the detection component comprising oxygen, the measurement gas contacting the cathode; and

A2 means for controlling a gas diffusion of the measurement gas in such a manner that the oxygen pumping current varies in accordance with a pressure of the measurement gas, the measurement gas moving from a measurement atmosphere toward the cathode by way of the means for controlling the gas diffusion, to thereby obtain information on the pressure of the measurement gas based on the oxygen pumping current.

2. (Amended) The gas sensor as claimed in claim 1, in which the means for controlling the gas diffusion is a porous body having pores with bore diameters in a range from 0.01 μm to 1 μm .

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3. (Amended) The gas sensor as claimed in claim 2, in which the diffusion which is so controlled by the means for controlling the gas diffusion as to vary the oxygen pumping current in accordance with the pressure of the measurement gas is Knudsen diffusion.

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5. (Amended) The gas sensor as claimed in claim 3, in which the porous metal material of the anode is a palladium material which is one of palladium and palladium alloy.

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7. (Amended) The gas sensor as claimed in claim 1, in which the gas sensor comprises a plurality of the cathodes as different pressure dependency electrodes, and a plurality of the means for controlling the gas diffusion, each of the different pressure dependency electrodes corresponding to one of the respective means for controlling the gas diffusion; in which the means for controlling the gas diffusion are so adjusted in terms of gas diffusion resistance as to make a difference between the corresponding different pressure dependency electrodes in terms of pressure dependency of the oxygen pumping current to be outputted; and in which the information on the pressure of the measurement gas is generated based on the oxygen pumping current outputted from each of the different pressure dependency electrodes.

11. (Amended) The gas sensor as claimed in claim 7, in which each of the means for controlling the gas diffusion corresponding to one of the respective cathodes is formed with a gas vent so as to introduce the measurement gas to one of the respective cathodes, and in which a diffusing power for the measurement gas is adjusted in accordance with a bore diameter of the gas vent.

AS 12. (Amended) The gas sensor as claimed in claim 11, in which the gas vent of the means for controlling the gas diffusion of the first cathode has the bore diameter in a range from 3 μm to 3,000 μm , the outputted oxygen pumping current being less pressure dependent at the first cathode than at the second cathode.

13. (Amended) The gas sensor as claimed in claim 12, in which the diffusion at the means for controlling the gas diffusion of the first cathode is a free diffusion, and in which the oxygen pumping current detected at the gas diffusion control of the first cathode corresponds to the concentration of the oxygen of the measurement gas substantially on one-to-one basis.

16. (Amended) A sensor unit comprising a pressure sensor, the pressure sensor comprising:

a sensor element formed of a solid electrolyte having an oxygen ion conductivity;

a cathode and an anode, each formed of a porous metal material and each formed on the sensor element, to produce a pumping current reflecting a concentration of a detection component in a measurement gas when a predetermined voltage is applied between the cathode and the anode, the detection component comprising oxygen, the measurement gas contacting the cathode; and

AB means for controlling a gas diffusion of the measurement gas in such a manner that the oxygen pumping current varies in accordance with a pressure of the measurement gas, the measurement gas moving from a measurement atmosphere toward the cathode by way of the means for controlling the gas diffusion, to thereby obtain information on the pressure of the measurement gas based on the oxygen pumping current,

in which the sensor unit generates and outputs information on an atmospheric pressure and an altitude based on the information on the pressure obtained by the pressure sensor.

17. (Amended) The sensor unit as claimed in claim 16, in which the pressure sensor comprises a plurality of the cathodes as different pressure dependency electrodes, and a plurality of the means for controlling the gas diffusion, each of the different pressure dependency electrodes corresponding to one of the respective means for controlling the gas diffusion; in which the means for controlling the gas diffusion are so adjusted in terms of gas diffusion

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Cont'd resistance as to make a difference between the corresponding different pressure dependency electrodes in terms of pressure dependency of the oxygen pumping current to be outputted; and in which the information on the pressure of the measurement gas is generated based on the oxygen pumping current outputted from each of the different pressure dependency electrodes.
